

CPSYC 2014

Brain Dynamics of Mild Cognitive Impairment (MCI) from EEG Features

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Abstract

MCI is a clinical state intermediate between elderly normal cognition and dementia featuring cognitive impairment on neuropsychological testing. The purpose of this research is to identify EEG features of MCI in comparison with the normal aging. Mini mental State Examination were used as screening tool from twenty participants and 14 participants were considered normal and 6 MCI. MCI group revealed the increase of beta2 power over the right anterior region in comparison with the normal healthy aging. Both groups showed a predominance distribution of theta and alpha at the frontal regions, but the presence of theta are highest at the parietal and temporal area indicating signs of cognitive decline among the MCI. A reduction of delta at the prefrontal area (F3, Fz, F4) and the central regions (C3, Cz, C4) for the normal suggests associated cognitive decline at the hippocampal area.

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Peer-review under responsibility of the Organizing Committee of CPSYC 2014.

Keywords: EEG; mild cognitive impairment.

1. Introduction

MCI is a clinical state intermediate between elderly normal cognition and dementia featuring memory complaints and cognitive impairment on neuropsychological testing, but no dementia [3 9]. In studies carried out in memory clinics, 10-15 per cent of people with MCI went on to develop dementia in each year. Since the number of individuals with AD is expected to increase considerable in the near future, reliable treatment and early diagnosis of MCI are critical. Recent research have demonstrated that QEEG is useful for investigating AD [1,4]. Topographical EEG power changes are believed to reflect early signs of cortical atrophy and/or compensatory cortical reorganization during the early stages of the disease.